Soil and Water Conservation News

United States Department of Agriculture
Soil Conservation Service

JANUARY-FEBRUARY 1991 Volume 11, Number 7

Range and Pastureland

Cover: Native rangeland has prospered through planned grazing systems under the Great Plains Conservation Program. Maurice Davis, then SCS area range conservationist in Pierre, S. Dak., inspects green needlegrass and western wheatgrass on the Smith property in Corson County. (Tim McCabe photo)

Soil and Water Conservation News is the official magazine of the Soil Conservation Service. The Secretary of Agriculture has determined that publication of this periodical is necessary in the transaction of public business required by law of this Department. Use of funds for printing *Soil and Water Conservation News* has been approved by the Director of the Office of Management and Budget. *Soil and Water Conservation News* (ISSN-0199-9060) is published 6 times a year. Postage paid at Washington, D.C.

Soil and Water Conservation News and other SCS reports are available electronically on the Computerized Information Delivery (CID) System. For subscription information, call 202-447-5505.

Clayton Yeutter
Secretary of Agriculture

R. Mack Gray
Acting Chief
Soil Conservation Service

Henry Wyman
Director
SCS Public Information Division

Leslie Jane Wilder
Editor

Paul DuMont
Mary Jo Stine
Associate Editors

Kim Berry-Brown
Contributing Editor

Chris Lozos
Design Consultant

Magazine Inquiries
Send inquiries to: The Editor, *Soil and Water Conservation News*, Public Information Division, Soil Conservation Service, U.S. Department of Agriculture, P.O. Box 2890, Washington, DC 20013-2890.

Subscriptions
$6.00 per year domestic; $7.50 per year foreign. Single copies $1.25 domestic; $1.50 foreign. Send subscription orders to: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

Comments from the SCS Chief:

Long-Term Planning for Range and Pastureland

Non-Federal rangeland in the United States represents nearly a third of the total land area of the lower 48 States—more than 400 million acres. The majority of this rangeland needs improved management: nearly two-thirds is classed as in fair or poor condition.

Owners and operators of private grazing land look to the Soil Conservation Service for assistance in planning and applying conservation practices. We are determined to provide the best possible technical assistance to rangeland users in their efforts to improve the productivity of their land.

To accomplish this, SCS has begun long-term planning in range and pasture management and has introduced a series of training courses designed to improve agency employees' skills. Under the long-term plan, SCS will:

- Provide technical assistance in range, pasture, and hayland management; draw up guidelines for management practices that are consistent and yet flexible enough to meet changing conservation and land-user needs; make state-of-the-art conservation planning tools and methods available to field office staff and include them in the revision of the National Range Handbook.
- Develop an integrated software program to assist SCS staff with inventory, evaluation, and planning processes. It will enable SCS to better help land users select the best conservation systems for their needs.
- Develop training programs to increase the technical proficiency SCS staff needs to do the job.
- Develop closer working relationships with producer and professional organizations and the National Association of Conservation Districts. In June, SCS plans to meet with representatives of some of these organizations to get their input on implementing the long-term plan.

As part of SCS's expanded training for employees, four staff members were sent to college for advanced formal education in computer science, range hydrology, economics, and range wildlife management with an emphasis on nontraditional rangeland uses. The first three have now completed their training and will be putting their new knowledge to work for SCS.

SCS's planning and training have been designed to serve the immediate needs of ranchers and farmers as well as to be consistent with the agency's long-term conservation goals.

Mack Gray

Acting Chief

Contents

Departments

Range and Pastureland

Seeded Range Helps 'A-I' Make Money In Wyoming

FOUR GENERATIONS of the Sims family have watched their cattle ranch—nestled in the high plains in southern Wyoming—steadily grow in value.

The treatment of the 1,100 acres of seeded pastureland has allowed the Sims to improve their artificial insemination (A-I) program. Application of conservation practices led to significant returns on their investment for the area treated.

For the last 25 years, the Medicine Bow Conservation District and the Soil Conservation Service have helped the Sims increase grazeable forage and control erosion on the Sims Land & Livestock Ranch. The 1/4-century comparisons help document the value of conservation application.

"Where our breeding program is concerned, we could not do it without our seeded pasture," said Scott Sims. "We rotate from pasture to pasture every few days to provide fresh, lush forage. Pasture grazing helps 'flush' the cattle before A-I."

Through the Great Plains Conservation Program, the Sims seeded 1,100 acres of "fair condition" rangeland. Improved forage production and erosion control resulted. They installed fences and water developments as needed.

Black baldy cows benefit from the improved pastureland. (Ron Nichols photo)

Pastures are arranged around the A-I facility for easier handling of the cattle. Ten miles of fencing, 2 miles of stock-watering pipelines, six tanks, and two wells were added to the original facilities.

"The combination of the pasture improvement and the 'A-I' program increased production and efficiency at the same time," said Sims. "Neither program would have performed as well without the other."

Is total resource management critical to a successful ranching operation? The Sims family surely believes it is!

Robert Yaeger, area range conservationist, SCS, Medicine Bow, Wyo., and **Fred Riffle,** State economist, SCS, Casper, Wyo.

Sims Land & Livestock Ranch
Carbon County, Wyoming

Ranch has: 7,800 acres native range; 1,100 acres improved dryland pasture; 1,100 acres irrigated hayland.

Other factors: 7,300 feet above sea level; 12 inches annual precipitation; 80-day growing season.

	1965	1989
Herd size:	250 mature cows, 9 bulls, 50 heifers	382 mature cows, 9 bulls, 82 heifers
Breeding rate:	80% first-calf heifers (65-day period)	88% first-calf heifers (45-day period)
Calves born:	60% in first 21 days	80% in first 21days
Weaning wt.:	410 lb/calf	542 lb/calf
Calf value:	$55,350 at 60 ct/lb	$118,048 at 60 ct/lb

Cost of installed improvements through 1989: $96,063, or $87.33/acre.
Amortized (30-yr) cost, plus 12% annual interest: $22.20/acre.
Net improved-calf income: $62,698 or $57/acre.
Annual improved-acre profit: $57 income — $22.20 cost = $34.80/acre.
Investment return: 39 percent.

Small Pastures Produce Plenty

AS SOON AS fences for their short-duration grazing systems go up, the speed of passing pickup trucks goes down, southwestern Missouri farmers have noticed.

Neighbors are curious about the new grazing concept. Some find it hard to believe that herd sizes can be increased when large pastures are divided into smaller paddocks.

"A conventional system with a couple of large pastures uses only about 30 percent of the grass," explained Ian Kurtz, Soil Conservation Service resource conservationist in Springfield, Mo. "By breaking large pastures into paddocks about 1 to 3 acres each, the grass utilization rate nearly doubles."

Don Proffitt of Pottersville, Mo., bragged about results from the short-duration grazing system he has had for 4 years. "We used to run 50 cows and calves; now we're running about 75 most of the time on the same number of acres."

Proffitt keeps his cattle in one of eight 10-acre paddocks, moving them to a fresh paddock every few days. Next spring he plans to subdivide, turning each paddock into two.

Joe Ewing of Morrisville, Mo., switched to a short-duration grazing system last year. Ewing estimated that the electric fencing he installed would soon be repaid, while the system should last some 20 years. Another farmer, John Cash of West Plains, Mo., using old posts and wire for materials, started his system for under $300.

"Keeping the same number of cattle on this ground, I used to feed hay in November," Cash said. "With this system, I don't feed hay until March. Then it's only another 30 days until the grass is ready again. I can't think of anybody who started a system and quit—because it works."

The advantage of a short duration grazing system is that it forces cattle to eat grass from all areas of the paddock, SCS'er Kurtz noted. This eliminates problems common to use of large pastures, where cattle tend to overgraze some areas and undergraze others. Certain areas also get trampled or covered by manure, which leads to soil erosion.

"A short-duration grazing system can work for almost any livestock producer or dairy farmer," Kurtz advised. "They need to have an understanding of the basics of how plants grow and need the skill to estimate the amount of forage in a paddock when they open the gate. If they can do those two things, they can make the system work."

Charlie Rahm, public information specialist, SCS, Columbia, Mo.

Steve Freeman of Hartville, Mo., moves his cattle from one paddock to another under a short-duration grazing system. (Charlie Rahm photo)

Continued SCS monitoring will document the response of grasses to the return of normal rainfall.

Ranchers Cope With Arizona Drought

DROUGHT IS NO stranger to southern Arizona; in fact, it is a frequent visitor. The dilemma for Soil Conservation Service range conservationists is how to persuade ranchers to keep applying good grazing management techniques when the results of many years' effort can be devastated by one drought.

One of the driest years on record over much of southern Arizona was 1989. That year followed several years (1982-87) of average or above average rainfall. Range managers estimated that during the drought, one-half to three-quarters of the grass plants died in the transition area between the Upper Sonoran Desert shrubland and the Chihuahuan Semidesert grassland of southern Arizona.

Throughout the 1989 drought, SCS range conservationists encouraged ranchers in the transition area to reduce their herds. Reduced animal numbers helped keep utilization in line with the lower amount of grass production.

SCS'ers suggested that ranchers conserve the dead grass material as litter so that, with the return of normal rainfall, new plants might be able to establish themselves. Ranchers that followed good grazing management practices had a forage reserve that lasted about halfway through the drought.

SCS monitoring at key areas on many ranches in Pima and Pinal Counties provided measurements of the drought and its effect on grass species. Grass mortality was most pronounced in one area of Pima County where only 2 inches of rain fell from November 1, 1988, to July 15, 1989. Average rainfall expected for the time period was 4-1/2 inches.

By the time summer rains started in late July 1989, the grass plants were dead. At the key area on one ranch, 52 percent of the Arizona cottontop and 77 percent of the Santa Rita threeawn plants died. Grazing utilization of both species was less than 30 percent in 1988 and 1989. Grazed and ungrazed plants died in equal amounts.

In previous years with average or above average rainfall, the transition area developed a good cover of perennial grasses. But much of this cover was lost in one prolonged drought. In the transition zone from shrubland to grassland across southern Arizona, it is clear that periodic drought will occur.

Continued SCS monitoring will document the response of grasses to the return of normal rainfall. The information will help range conservationists and ranchers to plan their actions for future drought periods.

The 1989 loss of plant cover was a setback, but the art of range management lies in understanding the reasons for such natural disruptions and in devising ways to cope with them.

An October 1988 view, left, of the transition zone range shows good grazing cover, due to average or better rainfall from 1982 to 1987 and good management. By June 1990, right, many grass plants had died in the area, exposing bare ground. (Dan Robinett photos)

Dan Robinett, area range conservationist, SCS, Tucson, Ariz.

"What we learn here can also be applied to other parts of the State to benefit other species."

Prairie Chicken Habitat Promoted

A puffed-up Wisconsin prairie chicken begins "booming," performing its mating ritual. Warm-season grasses are the bird's preferred breeding habitat. (Jim Keir photo)

OVER 100 YEARS ago in Wisconsin, the strut of the prairie chicken was a familiar sight. The volleyball-sized bird, with its distinctive coloring, fan-shaped tail, and "booming" mating call, thrived throughout the eastern end of the Great Plains rangelands on the State's native warm-season prairie grasses.

Today, the prairie chicken is a threatened species in Wisconsin, partly because cool-season pastureland grasses replaced the bird's preferred breeding habitat of warm-season grasses. But that may change—a major effort is underway to restore a healthy prairie chicken population in central Wisconsin.

"The reason we still have prairie chickens in Wisconsin is because we have a grassland management program on government lands," maintained Jim Keir, Wisconsin Department of Natural Resources wildlife manager. "But government lands aren't enough. Wisconsin farmers have to buy into the idea of warm-season grass pastures."

Keir has served as project manager of the Central Wisconsin Prairie Chicken Management Program for the past 5 years. Other program cooperators are the Soil Conservation Service and the University of Wisconsin-Extension.

But what would be the advantage for private landowners? From the end of May to the middle of August, Wisconsin farmers typically graze cattle on mature cool-season grass pastures that are low in nutrition and palatability to the animals. Or they invest in hay supplements to feed their cattle until late summer, when the fall growth period of cool-season grasses begins.

"If farmers turn over a portion of their pasture to warm-season grasses such as big bluestem and switchgrass, they get a longer grazing season for their cattle," explained John Pingry, SCS State agronomist, Madison, Wis. Rather than buying hay, farmers can move the herd from a pasture of mature cool-season grasses to an actively growing stand of warm-season forages.

The payoff for environmental concerns is that prairie chickens, as well as other birds such as meadowlarks, bobolinks, and upland sandpipers, gain improved habitat. By the time the cattle are moved to the warm-season grassland, the prairie chicken's breeding season is over.

SCS, through the plant materials program, and Dan Undersander, UW-Extension forage agronomist, are working to find grasses that grow well and are the most palatable to cattle. Experimental plots contain 39 varieties of prairie grasses; comparing their growth will tell which warm-season grass varieties perform best in central Wisconsin.

"This effort can help maintain what we have and increase bird populations while benefiting the farmer," summed up Tom Thrall, SCS State biologist, Madison, Wis. "What we learn here can also be applied to other parts of the State to benefit other species."

Virginia Mayo Black, information volunteer, SCS, Madison, Wis.

...the city has gradually moved in on the once-rural area. By 1983 there were apartments, trailer units, and duplexes bordering the dairy pastures.

Farmer Sets Example For Urban Neighbors

JUST OUTSIDE Portland, Oreg., a small dairy farm is proving that farmers can overcome land-use conflicts and thrive side by side with city dwellers while maintaining good conservation practices.

Solon and Sally Spencer's dairy farm is located within the city limits of Gresham, and they've been in operation for 30 years.

In 1961 Solon Spencer became a cooperator with East Multnomah Soil and Water Conservation District. In those days the countryside was dotted with small dairies and farms, and it was then that Spencer began applying conservation practices.

However, the city has gradually moved in on the once-rural area. By 1983 there were apartments, trailer units, and duplexes bordering the dairy pastures.

At such close quarters, sometimes it wasn't possible for urban neighbors to enjoy the tranquil country setting without noticing the unpleasant farm odors. The Spencers' dairy farm was also a potential polluter of the nearby creek.

A hook up to the city's sewer system was a possibility Spencer had considered for a long time. But he needed the cooperation of city officials, and his neighbors as well, since an easement for sewer lines through the adjacent properties would be required.

At this point Spencer turned to the district, the Soil Conservation Service, and the Agricultural Stabilization and Conservation Service (ASCS) for assistance. With the cooperation of neighbors and city officials, Spencer was able to install a line from his milking parlor to the city sewer.

This was unique for this area—a dairy farm hooked up to a city sewer system. Now any uncontrolled runoff from his dairy milking parlor is piped into the sewer system, thus controlling runoff and improving water quality in the nearby creek. This creative solution satisfied his neighbors: odors were controlled and the possibility of creek pollution was prevented.

The Spencers continue to establish practices set forth in a conservation plan that is now 50 percent complete and right on schedule. In addition to structural practices that control runoff and facilitate handling and removal of dairy waste, their plan calls for intensive pasture management to improve yields and further reduce the possibility of erosion and runoff.

Spencer was chosen as one of the Goodyear Outstanding Farmer winners from Oregon and was named the Oregon Association of Conservation Districts Conservation Farmer of the Year for 1990.

Shirley Boothby, district director, East Multnomah SWCD, Portland, Oreg.

The farm odors from the Spencer dairy operation do not bother the urban neighbors because this farm is hooked up to the city sewer system. (Douglas Bishop photo)

There is less labor needed, less hay to make, fewer chemicals used, and fewer weeds to control.

Low Input, High Output

CAN YOU BELIEVE it—a farming system that requires only an hour of work a day! It's a system that turned a 104-acre farm with soils with moderate to severe limitations into a profit-making, sustainable operation.

Dunwoody Zook of Chester County, Pa., loves his land. But like many farmers, Zook was faced with supporting his farm rather than the farm supporting him. After doing considerable research and observing various operations, Zook contacted the Soil Conservation Service for help in installing a system that combined high-density rotational grazing, high-quality beef cattle, and custom marketing of chemical-free freezer beef.

Having operated the system over a number of years, Zook is definitely pleased with the results and ease of management. His custom freezer-beef operation is adding to the profits, but high-density, short-duration grazing has made it possible to keep the family farm.

Zook's cattle herd has tripled, supplemental summer feeding has been eliminated, and the system requires very little investment in machinery as the cattle harvest the grass.

There is less labor needed, less hay to make, fewer chemicals used, and fewer weeds to control. His cattle are healthier, and weaning weights have increased. He has also extended his grazing season by 45 days a year.

Before implementing a short-duration grazing system, 16 acres barely supported nine cows and their calves. Hay had to be fed during the summer months when cool-season grass was dormant.

In 1984, Zook asked the SCS field office in West Chester, Pa., to help plan a grazing system for his 32 acres of existing bluegrass, clover, and perennial ryegrass. Only one pasture required reseeding: 6 acres were planted to switchgrass, a warm-season grass that provides forage during the hot, dry summer months. Livestock water is supplied by spring developments.

By 1989, Zook's herd consisted of 29 cows and their calves, 7 replacement heifers, and a bull. No supplemental feeding of hay or grain was needed during the summer months, including the summer of 1988, which was one of the hottest and driest on record. Surplus grass was actually harvested as hay that year.

Besides a tractor and mower, little equipment is needed to operate this system. Some mowing is necessary, and fertilizer and lime may be added to keep the system at maximum efficiency.

Weeds are not a problem because cattle eat everything in the paddock, and that eliminates undesirable vegetation. The combination of cool- and warm-season grasses creates a system that self-adjusts to the weather.

Fencing is an important part of Zook's grazing system. He installed a high-tensile electric fence around the perimeter of the system and uses a portable strand of light-weight, electrified fiber wire to contain the cattle within paddocks.

The cows soon learned the system of rotation and are ready and waiting to be let into a fresh, lush paddock. They virtually move themselves. As Zook describes the livestock's love of new grass: "It's like giving candy to a baby."

Dunwoody Zook rotates the livestock to the next paddock. (Tim Smail photo)

David Lorenz, plant materials specialist, Northeast National Technical Center, SCS, Chester, Pa., and **Timothy Smail**, soil conservationist, SCS, West Chester, Pa.

International Conservation

SCS, USSR Exchange Reindeer Range Facts

Soviet Eskimos use this yuranga, a portable structure of canvas, reindeer hide, and poles, for living quarters as they move their reindeer to different range sites in northeastern Siberia. (J. David Swanson photo)

IN A HANDS-across-the-seas and across-the-tundra-slopes effort, the Soil Conservation Service met in northeastern Siberia, USSR, during August 1990 with Soviet range ecologists and exchanged reindeer management information.

SCS knows range management in the lower 48 States. But reindeer range management in Alaska is vastly different.

Instead of Herefords, bluebunch wheatgrass, and cowboys on horseback, there are massively antlered reindeer, lichens, dwarf shrubs, and Yupik and Inuit Eskimos astride snowmobiles or in all-terrain vehicles.

SCS wants to provide useful range management information to reindeer owners and herders as well as to ranchers in more traditional settings.

Under the Science and Technology Exchange Program, SCS's International Conservation Division and the U.S. Department of Agriculture's Office of International Cooperation and Development coordinated with the Soviets' Magadan Agricultural Research Institute for the August meeting. Previously, the Soviets met in Anchorage with SCS'ers headed by Burton Clifford, Alaska State conservationist.

In late June, Yupik Eskimo reindeer herders on Cape Espenburg in western Alaska move their animals into corrals to harvest wet-velvet antlers for marketing. (SCS photo)

"We visited sites near Provideniya, Anadyr, and Magadan in the Soviet Far East," said David K. Swanson, SCS area soil scientist in Fairbanks. "We learned how the Soviets manage reindeer on their Arctic tundra rangelands. And we gave them information about our reindeer range surveys, range monitoring and grazing practices, and our conservation planning."

SCS provides reindeer herders and range managers throughout western Alaska and several Bering Sea islands with rangeland information: inventories, conditions and trends, range maps, range monitoring, lichen exclosure studies, and soil and snow surveys.

"As a result of our August 1990 meeting, we'll be collaborating on such reindeer management work as soil and vegetation mapping, grazing, fire and transportation effects on the tundra, and reindeer and musk-ox diet structures," said team leader J. David Swanson, SCS State range conservationist in Anchorage.

SCS works hand in hand through the Alaska Soil and Water Conservation District to assist cooperators who herd or own reindeer.

SCS and Alaska reindeer herders have also exchanged professional information and visited reindeer operations in Canada, Norway, Sweden, and Finland. But communications with the largest reindeer herding country, the Soviet Union, have always been the most difficult. Now the "ice is breaking" in the Arctic.

Dan LaPlant, State biologist/public affairs specialist, SCS, Anchorage, Alaska

USA, China Cooperate To Improve Grasslands

THE SOIL Conservation Service and the Grassland Research Institute (GRI) of the People's Republic of China are exchanging and producing technology to improve range management in Inner Mongolia and the United States.

Grasslands of Inner Mongolia and rangeland in the northern Great Plains of North America are very similar in structure and composition. SCS and GRI will benefit by comparing revegetation and reclamation techniques.

SCS scientists visited Inner Mongolia in 1987 and 1988. Now SCS plant materials centers are receiving germplasm of certain Inner Mongolian grasses for long-term study and selection, especially for grazing tolerance.

GRI is evaluating several U.S. rangeland cultivars; a scientist is studying large-scale seed production and the processing of range grasses at the Bridger, Mont., center.

The initial technology exchange is focusing on three grass groups that predominate the Mongolian Steppe—Chinese leymus, crested wheatgrass, and needlegrass—and on their ecological counterparts in North America.

Chinese leymus is a sod-former that dominates mesic (medium moisture) range sites in much the same way that western wheatgrass does in the northern Great Plains. And they are genetically related.

But leymus is a poor seed producer and is hard to establish. SCS thinks that western wheatgrass, often used in the Conservation Reserve Program (CRP), can substitute for seedings in Inner Mongolia.

Crested wheatgrasses grow in most Mongolian grassland communities. The "fairway" type grows on mesic sites. Desert crested wheatgrass predominates on arid range sites. Siberian wheatgrass and Mongolian crested wheatgrass are common on drier, sandy sites.

The North American counterpart to this Asian wheatgrass complex is bluebunch wheatgrass. Crested wheatgrass has been widely used in North America since Dust Bowl days and more recently by CRP participants, principally on bluebunch sites.

Needlegrasses grow abundantly on both continents. The Chinese big needlegrass is similar ecologically to the North American green needlegrass. Other needlegrass species in Mongolia are similar to our needleandthread.

Many of these grasses are genetically related, so joint selection and evaluation programs to pool germplasm into elite populations may result in plant cultivars for use in both countries.

Future SCS visits to Inner Mongolia may focus on joint evaluation trials and large-scale field plantings. SCS has proposed to pursue similar technology exchanges with Mongolia and the USSR.

SCS and GRI believe that such integrated international efforts have much potential for developing high-performance plant cultivars and efficient management techniques to help conserve and improve the world's grasslands.

Scientists Wang Ming Chang, left, and Yun Jin-Feng inspect plot of SCS-released 'Barton' western wheatgrass at research station near Huhehot, Inner Mongolia, China. (SCS photo)

Jack R. Carlson, ecological sciences staff leader, West National Technical Center, SCS, Portland, Oreg., and **Li Bo,** Grassland Research Institute director, Chinese Academy of Agricultural Sciences, Huhehot, Inner Mongolia, China

International Conservation

Irish Pasture Management

The Irish produce grass naturally and through research have learned how to optimize its use and management. (Darrell Emmick photo)

"WHEN IT comes to pasture management in Ireland, seeing is truly believing." This was the reaction of an exchange team of Soil Conservation Service and Extension Service specialists from the United States that visited Ireland during May and June 1989.

SCS's International Conservation Division and the U.S. Department of Agriculture's Office of International Cooperation and Development helped arrange this four-person exchange program.

While observing first-hand why Ireland is so aptly nicknamed "The Emerald Isle," team members had the opportunity to visit Irish research scientists in dairy, beef, and sheep production at various locations throughout the country. The team also visited a number of farms to see how the average Irish farmer puts research recommendations into practice.

The typical Irish farm is nearly 100 percent perennial grass with intensively managed pasture utilized for up to 7 months of the year. Surplus forage accumulated in spring and early summer is harvested primarily as grass silage and fed during the winter as a preserved feed.

The Irish recognize that various classes or kinds of livestock have different nutritional requirements at different times of the year. Thus they modify their grazing systems to complement the needs of the animal.

A typical grazing system for dairy cattle, which have the highest demand for quality feed, uses 20 to 28 paddocks with animals rotating to fresh paddocks daily. Because beef cattle and sheep have lower nutritional requirements, grazing is less intense overall. Often, only four to five grazing paddocks are used at one time.

Like "The Emerald Isle," the northeastern United States uses a grass-based agricultural system. For feeding livestock, perennial grass is the most abundant, most easily grown, and least expensive crop that can be produced. But the United States, unlike Ireland, uses this resource as a mechanically harvested, conserved feed, rather than allowing livestock to graze their pasturelands with the assistance of a specialized grazing system.

Farmers in the Northeast today face difficult economic conditions. Feed costs are over half the production costs associated with producing meat, milk, or fiber. Many producers are being forced to re-evaluate their production methods and look for more cost-effective alternatives.

Producers can improve their economic position while enhancing livestock productivity by adopting alternative feeding strategies. Intensive short-duration grazing systems on pastureland are more energy efficient, require less labor, and demand less financial input than reliance on mechanically harvested and purchased feeds. This can dramatically change the economic picture on many financially stressed farms.

Through appropriate agricultural technology and sound biological information, Irish farmers have discovered the value of well-managed pastureland. In light of current economic conditions facing northeastern U.S. farmers, perhaps they can learn from Ireland's "greenprint" for success.

Darrell L. Emmick, grassland specialist, SCS, Syracuse, N.Y.

Rabbits And 'Roos' Range Down Under

IN SEARCH OF exotic plant species for forage and erosion control, a Soil Conservation Service team recently journeyed through the State of New South Wales, Australia.

Team members were Curtis Sharp, national plant materials specialist, Washington, D.C.; Jacy Gibbs, plant materials specialist, Boise, Idaho; and Jack Cutshall, State range conservationist, Alexandria, La.

The team traveled from coastal sites to inland areas of semiarid desert. New South Wales, in southeastern Australia, is about the size of Texas. Annual rainfall varies from 100 inches in tropical rain forests to 10 inches in the "outback" region. The group found that plant species used for forage and that techniques for their management were also diverse.

Hosting the trip was the New South Wales Conservation Service, which was founded in 1938. First stop was a visit to a sheep station, or ranch, owned by John and Gordon Williams, in the "tablelands" region. Hardinggrass and perennial ryegrass mixed with Hiafa and white clover were the major forage plants.

"The planned grazing system consists of rotating sheep to obtain the best quality from the forage," advised Doug Rhodes, New South Wales district conservationist. "Electric fencing offers a low-cost method of subdividing pastures and gives the owner management flexibility."

Three days and many miles later, the SCS team arrived in the "outback." Bill Tattnell, New South Wales district conservationist, provided tea on the Darling River with a "boiling billy," the pot or can stockmen use to boil water.

Next stop was a station run by Rob Jackson. When he started, Jackson had 3,000 ewes and 300 head of cattle. By controlling the stocking rate, developing water points, and carrying out a brush management program, he has increased livestock to 7,000 ewes and 600 head of cattle.

The SCS team members had questions about grazing rotation and deferred grazing. That's when they heard about "roos" and rabbits. It is practically impossible to exclude these two animals from Australian pastures.

During years with favorable moisture, populations of both native kangaroos, or "roos," and introduced rabbits increase dramatically. The opportunistic grazing system used by many stockmen helps keep these animals to a manageable level.

Unwanted brush is controlled with soil-applied chemicals. Because of the low rainfall, 4 parts of water are added to 1 part of chemicals to enable the product to penetrate through the soil to the root zone.

While team members were impressed by the size of the stations, they heard it was typical. An economical station in eastern New South Wales has 60,000 acres supporting some 600 grazing animals. In the semiarid interior, an average station has at least 200,000 acres supporting about 2,000 animals.

In New South Wales, plant materials research at the Cowra Research Center has been expanded. Native plants are evaluated for their ability to give increased forage and erosion control, particularly in the semiarid region.

Jack Cutshall, State range conservationist, SCS, Alexandria, La.

A kangaroo loping along is a common sight; it is almost impossible to keep the animals from Australian pastures. (Jack Cutshall photo)

...the RC&D is preparing a handbook of specific recommendations and ideas for addressing problems associated with grazing land and weed management.

'Weed Talk' Focuses on Grazing Land

THE SUBJECT was weeds, and the problem was identified: unwanted plants on grazing land are a biological pollutant and a societal problem. So, what do we do about them?

During May 1990, specialists concerned with weed management on the Nation's grazing land presented solutions at the National Grazinglands Weed Management Conference in Omaha, Neb.

Landowners and representatives from agribusiness, various levels of government, and environmental and natural resource organizations participated.

"The conference goal was to develop and prioritize solutions that addressed resource, environmental, economic, cultural, and social concerns of grazing land weed management in the United States," said Soil Conservation Service conferee Gene DeBolt, North Central Nebraska Resource Conservation and Development (RC&D) coordinator from Bassett, Neb.

"Direct results of the identified problem include decreased biodiversity, water quantity, and recreational opportunity. They also include reduced wildlife habitat, higher livestock production costs, and lower land values and revenues."

Of over 85 solutions discussed, the five judged best were prioritized (based on the identified problem):

1. Education efforts are needed to inform the public at all levels about the needs and benefits in controlling unwanted plants on grazing lands.

2. Inventory, mapping, planning, and identification are needed for all environmental aspects related to weed management on grazing lands.

3. A "grassroots" approach is needed where it does not exist and needs to be maintained and strengthened where local groups are already in place. Coordinated resource planning by local groups would allow for the necessary public input to develop, adopt, and implement an integrated plan.

4. Legislation is needed to provide coordination at the Federal and State levels in identifying government roles in regulation, research, technical assistance, and funding.

5. A central organization (preferably private) is needed to coordinate cooperation among all entities and groups.

A published proceedings of the meeting is available from the conference sponsors, the North Central RC&D and the Nebraska Leafy Spurge Working Task Force. Contact the RC&D at P.O. Box 130, Bassett, NE 68714.

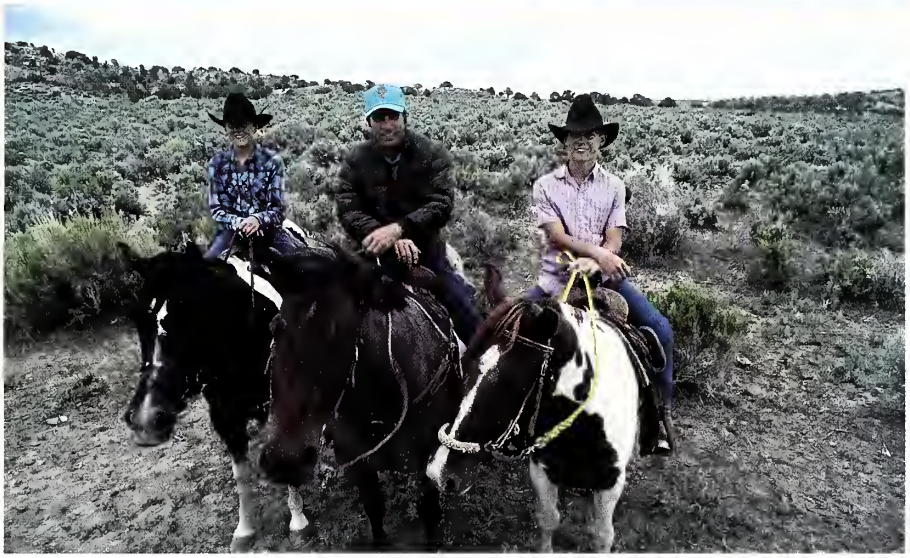
In addition, the RC&D is preparing a handbook of specific recommendations and ideas for addressing problems associated with grazing land weed management.

Gene Lehnert, range conservationist, North Central Nebraska RC&D, Bassett, Neb.

On Nebraska grazing lands, there are 200,000 to 300,000 acres of leafy spurge, considered a noxious weed. (ARS photo)

"There are so many people who are my legs—without them, I don't know how I could do what I do."

Utah Rancher Prevails by Tenacity



Cowpokes on the range, from left: Trent Brown, Bruce Brown, and Jeremey Gale. (Ron Nichols photo)

IT TAKES tenacity to ranch in the semiarid regions of Utah. And it takes even more tenacity to ranch there without the use of your legs.

Meet Bruce Brown. "He's tenacity personified," observed Ralph Smith, SCS civil engineering technician, Beaver, Utah. SCS helped Brown install a gravity-flow irrigation system on his ranch in 1987.

Brown ranches 330 acres of haying land, pastureland, and rangeland in southwestern Utah near Beaver. His interest in ranching began after a tragic accident changed his life.

In August 1973, Brown was repairing an air-conditioning unit on the roof of a mobile home when he moved too close to a nearby overhead power line. A powerful jolt of electricity knocked Brown off the roof. The fall broke his back and paralyzed his legs.

In 1975, Brown began to run the business end of a new home building company. But as an active man, he found himself missing the daily physical rigor of outdoor life.

"I was saying how bored I was and how I had to have something to do," Brown remembered. In 1979, his friend Dave Bradshaw suggested that Brown assist him with day-to-day operations of his farm. The two men adapted some of the farming equipment to Brown's specific needs. "I have to give Dave a lot of credit for giving me the chance," Brown said. "I had some real challenges, but he stuck with me all the way."

When Brown's brother decided to quit farming in 1987, Brown made a major move into the ranching/farming business. With the help of his wife LaRayne, and his four children, he began a new career.

"Without the kids, I wouldn't be farming," Brown said. "I want to keep the farm together for the kids." Part of the farm has been in the Brown family since the land was homesteaded.

The gravity-flow irrigation system installed by Brown and farming partner Dave Edwards in 1987 paid for itself in energy cost savings in only a year and a half. Brown enthused, "If a guy could do a project like this every time, with partners like Dave and the Soil Conservation Service, he'd be rich!"

In addition to his ranching/farming operation, Brown is the recorder for Beaver County; he's been reelected to the office four times. Brown loves the job, but also loves trading his wheelchair for a horse after a day at the office.

Without the use of his legs, Brown relies on a specially adapted harness that helps him ride the range on horseback, rounding up cattle. Brown is a competitive team roper in his spare time.

"Many people have helped and continue to help me," Brown said. "There are so many people who are my legs—without them, I don't know how I could do what I do."

Ron Nichols, public affairs specialist, SCS, Salt Lake City, Utah

With this program, planners and producers can see economic evaluations—over a 1- to 20-year planning horizon—of alternative management choices.

Computers Help SCS Plan Grazing Management

RANCHERS ARE NOW receiving decision-support information produced from the Soil Conservation Service's Grazing Land Applications (GLA) computer program.

This recently released software addresses forage and animal inventories, forage value ratings, and the economics for applying conservation improvements and grazing management practices.

The first of a three-part computer program, GLA will soon be installed in SCS field offices across the country. The program can work on all grazing lands, including rangeland, pastureland, hayland, grazed woodland, and cropland used to produce forage crops.

With this program, planners and producers can see economic evaluations—over a 1- to 20-year planning horizon—of alternative management choices. Printed reports can assist in the decisionmaking, and they can serve as a record of decisions made.

The first livestock producers receiving such improved planning assistance were very pleased. Items praised included:

- Mechanisms for adjusting forage inventory to handle distribution and accessibility problems; and
- The economic section for evaluating treatment practices specific to the agricultural enterprise.

Forthcoming second and third phases will include:

- Forage and animal nutritional evaluations on per-enterprise bases;
- Automated grazing schedules; and
- Geographic information that provides acreage and linear measurements without having to manually measure these on a planning map.

SCS field office planner, left, uses Grazing Land Application computer program to assist in conservation decisionmaking. Equipment is usable in the field, office, or home. (SCS photo)

Clifford W. Carter, range conservationist, South National Technical Center, SCS, Fort Worth, Tex.

SCS Using Computerized Range Data

THE NATIONAL Range Data System (NRDS) provides storage, rapid retrieval, and analysis of rangeland data collected for 35 years by the Soil Conservation Service. The National Computer Center in Ft. Collins, Colo., maintains this system for SCS.

SCS range conservationists use the data to develop, correlate, and revise range-site descriptions. The resulting range information is used in conservation plans by SCS field office staffs.

NRDS information details vegetation profiles taken on individual sites, collected by species on a per-weight basis. Other profile information includes soil(s), climate, and past and present land uses and site management practices.

Information from over 8,000 sites is stored in NRDS, one of the largest data systems of this type in the United States. Range sites included vary from Florida's wetland range to high-altitude meadows in the Rocky Mountains.

NRDS data helps SCS work more effectively with landowners to ensure that the range resource is used within its ecological potential at each site.

Steven Ekblad, range conservationist, South National Technical Center, Fort Worth, Tex.

NEWS Briefs

Farmers Help Clean Bear Creek

Canoers are enjoying the newly reopened Bear Creek Floatway in Alabama. (Morris Gillespie photo)

In early August 1990, the 25-mile Bear Creek Floatway in Alabama reopened for business: boating, canoeing, fishing, camping, and other recreational uses. More than 300 farmers, local residents, and visitors were there for the celebration.

The floatway, located between two water storage and flood control reservoirs, exists only on weekends and holidays from May through October. That is when stored water is released for recreational purposes.

The Tennessee Valley Authority (TVA), the Agricultural Stabilization and Conservation Service (ASCS), the Cooperative Extension System (CES), local soil conservation districts, and the Soil Conservation Service were involved in the cleanup effort.

"We believe this is one of the few instances, if not the only one, that an entire waterway—closed because of nonpoint source pollution—has been cleaned up and reopened to recreation," said Don Sibley, director of the Bear Creek Development Authority.

Aerial color infrared photography was used to determine that animal wastes from livestock operations in the watershed as well as other nonpoint source wastes were washing into the creek and causing contamination.

Dale Baker, a swine producer in Franklin County, Ala., attended a 1985 meeting to discuss the pollution of the creek with the intention of getting polluters to clean up their act. "I found out I was one of the polluters, with my method of raising hogs under the bluffs above the streams," said Baker.

He began to plan and install practices to keep wastes from his 52-sow operation from polluting the creek. Other farmers now visit Baker's operation to gain new ideas on management of animal wastes.

TVA provided cost-sharing of up to 100 percent for the first $1,000 and up to 80 percent for the rest of the cost to farmers who would install an animal waste system. Extension agents recruited participants and promoted the use of the animal waste systems. ASCS managed the cost-sharing for TVA. SCS designed and installed the systems, and the districts coordinated and established multiagency priorities. A total of 136 animal waste management systems were constructed.

"Water pollution is a serious and growing problem in Alabama," said Ernest Todd, SCS State conservationist in Auburn, Ala. "We in SCS are committed to providing technical assistance to farmers in developing cost-effective systems to prevent animal wastes from polluting streams and lakes."

Morris S. Gillespie, public affairs specialist, SCS, Auburn, Ala.

Berg Honored

Norman Berg received the Soil and Water Conservation Society's highest honor for 1990, the Hugh Hammond Bennett Award. Berg was Soil Conservation Service chief from 1979 to 1982.

Berg was recognized for furthering a conservation ethic on the national and international levels for nearly 50 years. As chief, Berg organized the SCS International Conservation Division and attended meetings of the Organization for Economic Cooperation and Development in Paris. He also served on a United States-Canada team that studied migratory bird habitat.

A resident of Severna Park, Md., Berg is the part-time Washington, D.C., representative of the society.

The Duckwater Shoshone Tribe baled the hay in this pasture near Ely, Nev., in July. It will be used to feed the tribe's livestock this winter. (Paul Ragland photo)

Shoshone Pipeline Increases Forage

The Shoshone Tribe recently installed over 2 miles of irrigation pipeline on the Duckwater-Shoshone Reservation near Ely, Nev. The pipeline, completed in May 1990, will improve the watering system and produce increased forage on 526 acres of tribal pasture.

Shoshone Tribal Chairman Jerry Millet worked with the Soil Conservation Service staff in Tonopah, Nev., in planning for the pipeline. SCS district conservationist Paul Ragland and a conservation technician performed surveys and developed the pipeline installation plans.

"I have always wanted a more efficient irrigation watering system for the tribal pastures," noted Millet. SCS estimates that the system will provide a 12-percent increase in irrigation efficiency, saving 263 acre-feet of water each year. In the arid climate, this savings is significant.

The pipeline serves two separate pasture locations. An upper pasture is watered by a pipeline extension that consists of 4,300 feet of 12-inch PVC pipe with 22 outlet valves. The lower pipeline section, with a separate diversion, has about 7,200 feet of 15-inch PVC pipe with 29 outlet valves. The Shoshone Tribe received funds covering 50 percent of the project cost from the Agricultural Conservation Program of the Agricultural Stabilization and Conservation Service.

Duckwater Reservation residents managed the project and took part in pipeline construction. Next growing season, because of their work, there should be more water and increased forage on the tribal pastures.

Carol Brents, conservation technician, SCS, Tonopah, Nev.

NEW in Print

Grazing Management

Edited by John F. Vallentine

This March 1990, 533-page book examines the interaction between grazing animals and forage plants, especially the development of grazing plans for specific animals that incorporate the intensity, frequency, and seasonality of defoliation.

Although written as a text for courses in range/forage management and production, it is also an excellent reference for those working in SCS, state extension services, regional land management agencies, and state departments of agriculture.

Topics presented are (1) Comparison of types of grazing land with grazing animals, (2) Evaluation of productivity of forage plants under different grazing regimes, (3) Examination of specialized grazing systems, (4) Development of inventories of grazing resources, (5) Determination of nutritive quality of various forages, and (6) Sustainability of forage plant vigor and productivity.

Contents cover grazing management, grazing effects on plants and soil, manipulating grazing distribution, grazing and herbivore nutrition, grazing activities and behavior, plant selection in grazing, kind and mix of grazing animals, grazing animal intake and equivalence, grazing capacity inventory, grazing intensity, grazing seasons, grazing systems-part 1, grazing systems-part 2, and index.

Cost is $59.95 from Academic Press, Harcourt Brace Jovanovich, publishers, Book Marketing Department #00208, 1250 Sixth Avenue, San Diego, CA 92101-4311.

Range Development and Improvements

By John F. Vallentine

This third edition, published in 1989, is a very useful reference manual for ranchers, range technicians, public land administrators, wildlife biologists, agronomists, agriculturalists, educators, and students.

Topics include (1) plant control—biological, mechanical, herbicidal, and physical; (2) range seeding and fertilization; and (3) range animal handling facilities.

Contents cover planning range improvements, introduction to plant control, biological plant control, mechanical plant control, herbicidal plant control, range improvement by burning, planning range seeding, range seeding—establishment and management, special range seeding and treatment techniques, range fertilization, rodent and insect control, range animal handling facilities, appendix, literature cited, index of plants, and index.

Cost of this 524-page manual is $45 from Academic Press, Harcourt Brace Jovanovich, Book Marketing Department #00208, 1250 Sixth Avenue, San Diego, CA 92101-4311.

New in Print is prepared by **Paul G. DuMont**, *Soil & Water Conservation News* staff.

Moving?
Send present mailing label and new address including zip code to:

U.S. Department of Agriculture
Soil Conservation Service
P.O. Box 2890, Room 6002-S
Washington, D.C. 20013-2890

Official Business
Penalty for private use, $300

BULK RATE
POSTAGE AND FEES PAID
USDA-SCS
WASHINGTON DC
PERMIT NO. G-267

Conservation Calendar

January	6-10	American Farm Bureau Federation 72nd Annual Meeting, Phoenix, Ariz.
	12-17	Society for Range Management's 44th Meeting, Arlington, Va.
	13-17	National Turkey Federation Annual Convention, Orlando, Fla.
	20-22	National Cattlemen's Association Convention and Trade Show, Dallas, Tex.
February	5	Southern Association of Agricultural Scientists, Fort Worth, Tex.
	16-23	National Future Farmers of America (FFA) Week
	20-21	Midwest Poultry Federation Convention, Minneapolis, Minn.
	22-23	Ag Energy Symposium, Malta, Mont.
March	22-27	56th North American Wildlife and Natural Resources Conference, Alberta, Canada
	27-30	National Science Teachers Convention, Houston, Tex.
April	8-11	"Global Warming-A Call for International Coordination," Chicago, Ill.
	9-11	"Cover Crops for Clean Water" Conference, Jackson, Tenn.
	29-May 6	National Soil and Water Stewardship Week
	28-May 5	National Association of State Departments of Agriculture Food Exposition, Las Vegas, Nev.